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Docket No. GP-303400/GM2-0068

REMARKS / ARGUMENTS

Status of Claims

Claims 1-14 are pending in the application. Claims 1-9 and 11-14 stand rejected. Claim 10 stands objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant appreciates the Examiner's comments regarding the allowability of the noted claims. Applicant has amended Claims 1, 3, 7, 9, 10, 13 and 14, has canceled Claims 11 and 12, and has added new Claims 15-17, leaving Claims 1-10 and 13-17 for consideration upon entry of the present Amendment.

Applicant respectfully submits that the rejections under 35 U.S.C. §102(b) and 35 U.S.C. §103(a) have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

Rejections Under 35 U.S.C. §102(b)

Claims 7-9, 11, 12 and 14 stand rejected under 35 U.S.C. §102(b) as being anticipated by Ito et al. (DE 3216820, hereinafter Ito).

Applicant traverses this rejection for the following reasons.

Applicant respectfully submits that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, *in a single prior art reference.*" *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). Moreover, "[t]he identical invention must be shown in as complete detail as is contained in the *** claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Furthermore, the single source must disclose all of the claimed elements "arranged as in the claim." *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984). Missing elements may not be supplied by the knowledge of one skilled in the art or the disclosure of another reference.

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Titanium Metals Corp. v. Banner, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985).

Applicant has amended Claims 7, 9, 10, 13 and 14, and canceled Claims 11-12.

Claim 7 now recites, inter alia, "...the valve guide having inner and outer surfaces that define a thickness T... wherein the inner and outer surfaces of the valve shield define a thickness t; and wherein the thickness t is equal to or less than about 1/4 of the thickness T...".

Claim 9 has been amended to more specifically claim the subject matter regarded as the invention.

Claim 10 has been amended for consistency of language and proper antecedent basis.

Claim 13 recites amended language similar to that of amended Claim 7.

Claim 14 now recites, inter alia, "...the valve guide having inner and outer surfaces that define a thickness T... wherein the inner and outer surfaces of the valve shield define a thickness t, the thickness t being equal to or greater than about 1/8 of thickness T and equal to or less than about 1/4 of thickness T...".

Support for the noted claim amendments may be found in originally allowed Claim 10 and in the specification as originally filed. No new matter has been added.

Dependent claims inherit all of the limitations of the respective parent claim.

Here, Applicant has amended the claims to include a structural relationship between the valve shield thickness t and the valve guide thickness T that is found in originally allowed Claim 10 and the specification as originally filed, and not disclosed in Ito.

The Examiner comments that newly amended Claim 7 does not include all limitations of Claims 8 and 10, and requests an explanation as to the criticality and advantage of the thickness t being equal to or less than about 1/4 of the thickness T. Paper 20050119, page 2.

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At paragraph [0002], Applicant discusses a need in the art for an intake system in a combustion engine that may lessen the accumulation of high boiling fraction on intake valve surfaces.

At paragraph [0011], Applicant discusses an embodiment of the invention that provides an intake valve having a structure to reduce the accumulation of high boiling fraction between a valve stem and a valve guide.

At paragraph [0013], Applicant discusses an embodiment of the invention that provides a valve shield of thickness t that is equal to or greater than about $1/8$ of a valve guide having thickness T , and where thickness t is equal to or less than about $1/4$ of thickness T .

At paragraph [0016], Applicant discusses the elevated operating temperatures of surfaces within the combustion engine that results in the evaporation of the low boiling fraction and the accumulation of the high boiling fraction of the fuel that comes in contact with those surfaces.

At paragraph [0016], Applicant also discusses the advantage of the thinner valve shield being configured with an outer surface that operates at a lower temperature than the valve stem, thereby reducing the amount of evaporation of low boiling fraction and accumulation of high boiling fraction on the exposed surfaces of the valve stem and shield.

At paragraph [0017], Applicant discusses the desirability of the valve shield having a thickness t that is as thin as permissible for its intended function, namely for reducing the evaporation of low boiling fraction and the accumulation of high boiling fraction on the valve stem, which in turn would serve to reduce valve sticking.

At paragraph [0018], Applicant discusses some advantages of embodiments of the invention, which includes reduced accumulation of high boiling fraction on intake valve surfaces.

In view of the foregoing, Applicant respectfully submits that the thickness t being equal to or less than about $1/4$ of the thickness T has the advantage of tending to reduce

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the evaporation of low boiling fraction and the accumulation of high boiling fraction on the valve stem, thereby tending to reduce valve sticking.

In comparing the instant invention with Ito, Applicant submits that Ito does not disclose a valve shield having a thickness t that is equal to or less than about $1/4$ of the thickness T of a valve guide, as claimed in the instant invention.

Regarding Claim 9 Specifically

Claim 9 recites, inter alia, "...such that... the valve stem is *shielded from direct exposure* to a fuel containing high boiling fraction." Emphasis added.

In contrast with the instant invention, Applicant submits that Ito discloses a passage (12) that allows the valve stem (14) to be *directly exposed* to a fuel containing high boiling fraction by the fuel passing through end (18). Abstract, Figure 1A. Accordingly, Applicant submits that not only is Ito deficient in disclosing each and every element of the claimed invention arranged as claimed, but also teaches away from the claimed invention, and therefore cannot be anticipatory.

In light of the foregoing amendments and remarks, Applicant submits that Ito does not disclose each and every element of the claimed invention arranged as claimed and therefore cannot be anticipatory, and that the claimed invention provides an advantage not recognized by Ito. Accordingly, Applicant respectfully submits that the Examiner's rejection under 35 U.S.C. §102(b) has been traversed, and requests that the Examiner reconsider and withdraw of this rejection.

Rejections Under 35 U.S.C. §103(a)

Claims 1-6 and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ito in view of Matthews (U.S. Patent No. 5,592,913, hereinafter Matthews).

The Examiner acknowledges that Ito does not disclose a first clearance dimension and looks to Matthews to cure this deficiency. Paper 20041110, page 4.

Applicant traverses this rejection for the following reasons.

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Applicant respectfully submits that the obviousness rejection based on the References is improper as the References fail to teach or suggest each and every element of the instant invention. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). The Examiner must meet the burden of establishing that all elements of the invention are taught or suggested in the prior art. MPEP §2143.03.

Applicant has amended Claims 1, 3 and 13.

Claim 1 now recites, inter alia, "...the valve guide having inner and outer surfaces that define a thickness T ... the valve shield having inner and outer surfaces that define a thickness t... wherein the thickness t is equal to or less than about 1/4 of the thickness T...".

Claim 3 now recites, inter alia, "...the thickness t is equal to or greater than about 1/8 of the thickness T."

Claim 13 now recites, inter alia, "...the valve guide having inner and outer surfaces that define a thickness T... the valve shield having inner and outer surfaces that define a thickness t... wherein the thickness t is equal to or less than about 1/4 of the thickness T...".

Support for the noted claim amendments may be found in originally allowed Claim 10 and in the specification as originally filed. No new matter has been added.

Dependent claims inherit all of the limitations of the respective parent claim.

Here, Applicant has amended the claims to include a structural relationship between the valve shield thickness t and the valve guide thickness T that is found in originally allowed Claim 10 and in the specification as originally filed, and that is not taught or suggested by the combination of Ito and Matthews (the References).

Regarding Claim 6 Specifically

Claim 6 recites, inter alia, "...such that the valve stem is *shielded from direct exposure* to a fuel containing high boiling fraction." Emphasis added.

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In contrast with the instant invention, Applicant submits that Ito discloses a passage (12) that allows the valve stem (14) to be *directly exposed* to a fuel containing high boiling fraction by the fuel passing through end (18). Abstract, Figure 1A. Matthews fails to cure the deficiency of Ito. Accordingly, Applicant submits that not only do the References fail to teach or suggest each and every element of the claimed invention, but also teach away from the claimed invention, and therefore cannot be used to establish a prima facie case of obviousness.

In view of the foregoing amendments and remarks, and in consideration of the remarks set forth above regarding the rejections under 35 U.S.C. §102(b), Applicant submits that the References do not teach or suggest each and every element of the claimed invention and disclose a substantially different invention from the claimed invention, and therefore cannot properly be used to establish a prima facie case of obviousness. Accordingly, Applicant respectfully submits that the Examiner's rejection under 35 U.S.C. §103(a) has been traversed, and requests that the Examiner reconsider and withdraw this rejection.

Regarding Newly Added Claim 15

Applicant has added new Claim 15 that is directed to the invention of original allowable Claim 10 with all of the limitations of Claims 7 and 8 included. Support of Claim 15 may be found in the specification as originally filed. No new matter has been added.

Accordingly, Applicant submits that Claim 15 is allowable, and respectfully requests entry and notice of allowance thereof.

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Regarding Newly Added Claims 16-17

Applicant has added new Claims 16-17 that are directed to an invention similar to that of Claims 1 and 6, but in alternative language. Support of Claims 16-17 may be found in the specification as originally filed. No new matter has been added.

Regarding New Claim 17 Specifically

New Claim 17 recites, inter alia, "...wherein the valve shield is configured to shadow a portion of the valve stem *from direct exposure* to a fuel containing high boiling fraction." Emphasis added.

In contrast with the instant invention, Applicant submits that Ito discloses a passage (12) that allows the valve stem (14) to be *directly exposed* to a fuel containing high boiling fraction by the fuel passing through end (18). Abstract, Figure 1A. Matthews fails to cure the deficiency of Ito. Accordingly, Applicant submits that not only do the References fail to teach or suggest each and every element of the claimed invention, but also teach away from the claimed invention, and therefore cannot be used to establish anticipation or a prima facie case of obviousness.

For at least these reasons and the reasons set forth above regarding Claims 1 and 6, Applicant submits that Claims 16-17 are allowable, and respectfully requests entry and notice of allowance thereof.

In light of the forgoing, Applicant respectfully submits that the Examiner's rejections under 35 U.S.C. §102(b) and 35 U.S.C. §103(a) have been traversed, and respectfully request that the Examiner reconsider and withdraw these rejections.

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The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 06-1130.

In the event that an extension of time is required, or may be required in addition to that requested in a petition for extension of time, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above identified Deposit Account.

Respectfully submitted,

CANTOR COLBURN LLP

Applicant's Attorneys

By: 

David Arnold

Registration No: 48,894

Customer No. 23413

Address: 55 Griffin Road South, Bloomfield, Connecticut 06002
Telephone: (860) 286-2929
Fax: (860) 286-0115